

Remarks

Prior to this amendment, claims 1-16 were pending for examination. Claims 17-35 were previously withdrawn pursuant to a restriction requirement.

Claim 1 has been amended. New claims 36-45 have been added; new claims 36-40 comprise the previously allowed claims 9-12 and 16; new claims 41-45 depend on claim 1. The claims now pending for examination are claims 1-16 and 36-45.

Drawings

The Examiner objected to the drawings on the grounds that the "coil spring" referred to in the specification must be shown in the drawings or canceled from claim 6.

Applicant submits a new replacement sheet 2/6 with Figure 2A showing the coil spring, and Figure 2B showing the spiral disk spring. The specification has been amended in paragraphs 18 and 30 to conform with the amended drawings. No new matter has been added.

Allowed Claims

Claims 9-12 and 16 were found allowable if rewritten in independent form. Applicant submits herewith new claims 36-40 which comprise the allowed claims 9-12 and 16 amended to independent form including all the limitations of the base claim and any intervening claims.

Claim Rejections Under Section 102

Claims 1, 2, 6 and 13-14 were rejected under Section 102(b) as being anticipated by McClintock, US Patent 3,980,908. Applicant traverses this rejection for the reasons set forth below.

McClintock describes a system for controlling the closing of a camera shutter. A power supply for the shutter closure system includes a bidirectional linear magnetic generator which includes a spring drive which is mechanically loaded and unloaded by the film advance mechanism of the camera to power the exposure control circuitry. A solenoid magnetically latches the shutter in an open position during exposure until the solenoid coil is energized at a completion of the required exposure time to neutralize the magnetic flux in the magnetic stator of the solenoid, overcoming the magnetic latch and, due to a spring, biasing the armature to a second position which through a mechanical linkage closes the shutter. (McClintock Abstract.)

A skilled person in the field of designing inductive energy harvesters to generate electrical energy from mechanical vibrations, as claimed by applicant, would not consider McClintock to be relevant prior art. There are no "mechanical vibrations" being generated or utilized in the McClintock camera shutter mechanism. Rather, there is a single force motion by the user of the camera whereby a spring biased, reciprocally movable cap portion 42 is movable within the interior of a housing 40 "by movement of a conventional push rod 46 conventionally attached to the conventional film advance mechanism 48 associated with the camera, in which the example being described, is a Kodak Instamatic model 30, in the direction illustrated by arrow 50." (Id. at col. 4, lines 1-19.) Within the housing 40, a magnetically permeable iron latch disc 52 controls the positioning of permanent magnet 80 in one of two positions, as shown in Figs. 2 and 3. The magnet 80 is positioned (latched) at either one end, or at the other end of a chamber in housing 40, for controlling the shutter opening. (Id. at col. 4, lines 20-56.)

There are no “mechanical vibrations” being utilized or acted upon in McClintock. There is no “inductive energy harvester that generates electrical energy from mechanical vibrations” wherein a magnetic field source and induction coil are supported “in a manner that allows relative movements between the magnetic field source and the induction coil in response to the vibrations.” Instead, there are two latch positions in McClintock in response to a user induced force on a push rod.

To further clarify the difference, applicant has amended claim 1 to recite that the claimed magnetic field source and induction coil are supported “in a manner that allows relative oscillatory movement between the magnetic field source and the induction coil in response to the vibrations.” See applicant’s specification at paras. 2, 5, 29, 33 and 36, among others, describing such oscillatory movement. The word “oscillate”, is a commonly-used term both in the mechanical arts and in everyday common ordinary usage. As defined in the American Heritage Dictionary of the English Language, fourth edition, Houghton Mifflin Company, 2000, page 1243 (copy enclosed), the first definition of oscillate is :

“To swing back and forth with a steady, uninterrupted rhythm.”

This is clearly not what is transpiring in McClintock.

Furthermore, the coil and magnetic source configuration in McClintock differs substantially from that claimed by applicant. As recited in amended claim 1, applicant claims an induction coil that is positioned near a first pole of the magnetic field source, and during the relative oscillatory movement between the source and coil in response to the vibrations, the coil support maintains the position of the coil near the first pole:

“... an induction coil support that positions the induction coil near the first magnetic field source pole; and

a mechanical connector that mechanically couples the magnetic field source to the induction coil support in a manner that allows relative oscillatory movement between the magnetic field source and the induction coil in response to the vibrations while the coil support maintains the position of the coil near the first pole.”

There is no such configuration in McClintock. Rather, McClintock has two coils 60 and 62 disposed at opposite ends of a chamber in housing 40, and the magnet 80 is disposed in one of its two opposed latch positions, either at one end or the other end of the chamber, near one or the other of the two separate coils. Thus, not only is there no oscillatory movement in McClintock, but there is no induction coil support positioning the induction coil near a first magnetic pole and maintaining the position of the coil near the first pole during the relative oscillatory movement of the field source and coil.

Thus, applicant respectfully asserts that the present claims 1-16 patentably distinguish over McClintock.

Claim Rejections – Section 103

Claims 3-5, 7-18 and 15 were rejected under Section 103(a) as being obvious over the combination of McClintock in view of Bandera, US Patent 5,814,907.

The Examiner relies on Bandera as showing a spiral disk spring. Without conceding whether there is motivation to combine Bandera with McClintock, the combination would not cure the deficiencies of McClintock.

Furthermore, there is insufficient basis for a *prima facie* combination of McClintock and Bandera in the present context for at least the following reasons:

- A. McClintock and Bandera describe completely unrelated systems and environments, namely McClintock describes a camera shutter control

mechanism, which latches the shutter in one of two positions, whereas Bandera describes an electro-magnetic force motor with internal eddy current damping for the purpose of stabilizing the performance of the motor, i.e. maintaining a more uniform speed; these are two completely unrelated functions and environments;

- B. Neither McClintock nor Bandera show a configuration of elements as recited in amended claim 1;
- C. Bandera does not relate to an inductive energy harvester that generates electrical energy from mechanical vibrations, and thus cannot cure this deficiency of McClintock; and
- D. Bandera's use of springs is for a completely different purpose, namely "for both restoring drive rod 17 to a neutral or central position, and for supporting armature 13 within an annular chamber 12" in the electro-magnetic force motor 10 (see col. 4, lines 23-37).

Thus, there is no basis for the skilled person to attempt to combine any component of Bandera's electro-magnetic force motor with internal eddy current damping, into McClintock's camera shutter mechanism. Even if one did so, replacing the coil spring in McClintock with the spiral disk springs in Bandera, would not produce applicant's claimed invention.

The Examiner further relies upon Bandera showing a flux yoke and a second magnetic field source. Again, the Bandera configuration is not at all relevant to applicant's claimed energy harvester. The mere coincidence of some of the same elements, such as a magnet, inductive coil and spring, in different devices, to achieve different functions, cannot establish obviousness. Even Bandera's configuration of opposing magnets is different. In Bandera, there is no induction coil support that positions the induction coil near one pole of the magnetic field source, as claimed by applicant. Rather, coil 20 is shown extending across the hollow cylindrical outer housing 23, across both poles of both magnets 15R and 15L disposed at either end of a

chamber. Thus the coil and magnetic field source configuration in Bandera bears little if any relationship to the claimed subject matter in the present application.

Applicant respectfully asserts the present claims patentably distinguish over McClintock and Bandera.

New Claims

As previously described, new claims 36-40 correspond to previous allowable claims 9-12 and 16.

New claims 41-45, which depend from amended claim 1, further recite the components and configuration of applicant's inductive energy harvester. Claims 41-43 recite an electric circuit to process electrical energy generated by the coil in response to the vibrations and an energy storage device for storing electrical energy generated by the coil in response to the vibrations. Support for these amendments can be found in the specification at paras. 35 and 4.

New claims 44-45 more specifically define the arrangement of elements in the embodiments shown in Figs. 1 and 3. Support for these amendments is found in the specification at paras. 28-30 and 31-32. No new matter has been added.

RECONSIDERATION

It is believed that all claims of the present application are now in condition for allowance.

Reconsideration of this application is respectfully requested. If the Examiner believes that a teleconference would expedite prosecution of the present application the Examiner is invited to call the Applicant's undersigned attorney at the Examiner's earliest convenience.

Any amendments or cancellation or submissions with respect to the claims herein is made without prejudice and is not an admission that said canceled or amended or otherwise affected subject matter is not patentable. Applicant reserves the right to pursue canceled or amended subject matter in one or more continuation, divisional or continuation-in-part applications.

To the extent that Applicant has not addressed one or more assertions of the Examiner because the foregoing response is sufficient, this is not an admission by Applicant as to the accuracy of such assertions.

Please grant any extensions of time required to enter this response and charge any fees in addition to fees submitted herewith that may be required to enter/allow this response and any accompanying papers to our deposit account 02-3038 and credit any overpayments thereto.

Respectfully submitted

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